Cleaning method, cleaning apparatus and electro optical device

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Abstract of **TW278536B**

To provide a washing method and a washing apparatus capable of easily removing organic matter adhering to an evaporation mask of a low-molecular organic EL apparatus. The washing apparatus is an apparatus 1 for washing organic matter adhering to the evaporation mask of the low-molecular organic E apparatus and comprises a first stage 10 for treating the evaporation mask 140 with a pyrrolidone derivative; a second stage 20 for rinsing the evaporation mask 140 with water; a third stage 30 for rinsing the evaporation mask 140 with flowing water; a fourth stage 40 for treating the evaporation mask 140 wit ethanol; a fifth stage 50 for drying the evaporation mask 140; and transportation means 5 for successive transporting the evaporation mask 140 to the respective stages. It is preferable to use N-methyl-2-pyrrolidone as the pyrrolidone derivative.

Evidence 1

278537

A structure of a blocking wall by filling slurry

Disclosure of the invention

This invention relates to a structure of a blocking wall, and especially to a structure of a blocking wall by filling slurry.

Prior art blocking walls include the following types:

1. a bricking type :
   This type of wall is constructed by bricking with cement. It is necessary to move bricks to each floor, and cement and fine sands have to be stirred on the site. Moreover, after the wall is bricked, patching, flattening, powdering, spreading and painting are needed. The procedure thereof is complicated, time-consuming and costly, and this kind of wall is easy to crack. The installation of pipe lines is inconvenient and the stress structure of the wall will be damaged because the wall has to be drilled for the installation, resulting that the wall is liable to crack in an earthquake. Additionally, it is necessary to remove the waste material in the construction spot.
2. an ALC type:
   It relates to a construction type using an adhesive to brick ALC bricks (known as light weight bricks). After bricking, the wall only needs to be spread and painted. Although it is more convenient in construction, the ALC bricks are more expensive than regular bricks. Moreover, the problems of difficult installation of pipe lines and fragility still exist.
3. a plaster type:
   It builds an iron-made frame, and then fixes a plaster board on each face of the frame. The constructing steps are simpler and it is easier to construct and to put the pipe lines in the space between the plaster boards, and the cost is low. However, the plaster is liable to be destroyed by water and to be musty such that it is not suitable to be used in the high humidity climate of Taiwan. Moreover, the portion between the two plaster boards is hollow so the strength is low and noise is produced upon patting the wall. So the wall can not endure striking forces and can not have objects hanged thereon.
4. a RC type:
   It builds a reinforced steel frame, then fixes a wooden board on each face of the frome, and then fills concrete therein. It has the characteristic of solidity, easy-installation of pipe lines (the pipe lines should be installed before filling concrete) and easiness for filling concrete. However, a vast amount of

wooden frames (the used wooden frame can not be reused) is needed and the wooden product is becoming more and more expensive. Moreover, it is necessary to fasten the wooden frame, to build the steel frame and to remove the wooden frame after construction. The constructing technique as a whole is difficult and the constructing speed is slow such that the cost is high. After the wooden frame is removed, the processes of patching, powdering, spreading and painting are still needed. Additionally, since the structure of the RC wall as a whole is too heavy to be used as a blocking wall, the RC wall is more suitable to be used as an outer wall or a load-bearing wall.

In view of the drawbacks of these prior art blocking walls, a blocking wall by filling slurry has been developed, as shown in Figures 1 and 2 of Taiwanese Patent Publication No. 227243. In this conventional blocking wall by filling slurry (referred to as the prior patent hereinafter), a plurality of "ㄇ" shaped slotted iron frames 11 are constructed at a certain interval, wherein an upper edge and a lower edge of each of the slotted frames are fixed onto a ceiling 15 and a floor 16, respectively, by tap screws 101, and a two-face portion 111 of each of the slotted iron frames 11 is fixed onto a mesh-like iron slice 12 also by tap screws 102 so as to form an accommodating space. In construction, a space between an upper part and a lower part of the mesh-like iron slice 12 is provided with a filling hole 13. The accommodating space is filled with slurry through the filling holes 13, progressively from a bottom section to a top section thereof. The extra concrete and water will seep out through mesh holes. After the concrete is cured, the concrete will combine with the slotted iron frames 11 and the iron slice 12 to become an integral body, and the concrete is holding by the mesh holes of the iron slice 12 so as to form a solid integral blocking wall.

The above mentioned blocking wall by filling slurry is an improvement by combining the advantages of the plaster board and the RC wall. The advantage of this modification is that it achieves the goal of having a strong solid wall with the convenience of installing pipe lines and easy-constructing. Moreover, since the wall has the characteristic of being integrally formed rather than being formed by bricking pieces of bricks, the wall does not crack easily. However, this kind of construction is still not perfect and has the following disadvantages:

1. The wall surface during the filling of slurry is not smooth. Hence, the wall surface has to be laboriously patched and flattened. Then, after the wall surface is cured, the surface has to be powdered, spread and painted. The constructing steps are not simple.

2. The process of covering the mesh-like iron slice 12 is necessary. Since the iron slice 12 is flexible and will be bent, the space between the installed slotted iron frames can not be too large. One frame is required every 30 cm, approximately. The density of the tap screws has to be sufficiently large for strengthening the structure of the iron slice 12. Therefore, the construction is complicated and time-consuming.
3. The filling of slurry has to be progressively performed from the lower sections to the upper sections. In other words, the upper portion of the wall can not be filled with slurry until the lower portion is cured. Therefore, the speed of filling slurry is slow.

In view of these drawbacks, the present inventor proposed in this application a structure of a blocking wall by filling slurry.

The main object of this application is to provide a structure of a blocking wall by filling slurry in which the construction thereof is convenient, and the wall surface can be spread immediately after filling slurry, thereby achieving the advantages of convenience and cost reduction.

The main characteristic feature of this invention is that a solid outer board is used to replace the conventional flexible mesh-like iron slice so that the installation becomes simpler, and the process of powdering is eliminated. The outer board could be any one of a concrete fiber board, a mineral fiber board or the like, on which overflow holes are provided such that mesh holes and the slurry material can be tightly combined together. The overflow hole is of a stepped hole structure in which an outer hole portion is larger than an inner hole portion so that the cured slurry material produces a hooking effect to further increase the combination effect as a whole.

Therefore, a structure of a blocking wall by filling slurry according to this invention comprises an upper horizontal frame fixed onto a ceiling; a lower horizontal frame fixed onto a floor; a plurality of vertical frames built between the upper and the lower horizontal frames at a certain interval and each having two side-edges, wherein an upper and a lower ends of the vertical frame are fixed to the upper and the lower horizontal frames, respectively; a plurality of outer boards each having a plurality of overflow holes thereon, wherein the outer boards are fixed to the two outer edges of the vertical frames so that an accommodating space corresponding to a wall thickness is formed; and slurry filled in the accommodating space surrounding by the outer boards.

With the structure described above, a solid wall surface according to this invention is formed after filling the slurry. The outer boards of the wall, chosen

from the concrete fiber boards, the mineral fiber boards or the like, are very smooth such that the wall can be processed by directly patching the overflowing holes and the screw holes. In other words, the follow-up steps are very simple. Additionally, since the outer boards are not flexible, the vertical frames can be arranged with enlarged intervals and do not have to be densely provided whereby the construction becomes easier.

The other advantages, objects and characteristic features of this invention can be further understood by the following description of the preferred embodiment with reference to the drawings.

(1)Brief description of drawings:

Fig.1 is a schematic plane view of a conventional blocking wall by filling slurry;

Fig.2 is an exploded partial perspective view of a conventional blocking wall by filling slurry;

Fig.3 is a schematic plane view of a preferred embodiment according to the present invention;

Fig.4 is an exploded partial perspective view of a preferred embodiment according to the present invention;

Fig.5 is a cross sectional view of a combination of the outer boards and the vertical frames of a preferred embodiment according to the present invention;

Fig.6 is a cross sectional view of a combination of overflow holes of the outer boards and the slurry of a preferred embodiment according to the present invention.

(2) A list of reference numerals with their corresponding elements:

2 upper horizontal frame
3 lower horizontal frame
4 vertical frame
5 outer board
6 slurry
51 overflow hole
53 filling hole
75 accommodating space
76 tap screw

Please refer to Figures 3, 4 and 5. The embodiment of this invention comprises a blocking wall constructed by an upper horizontal frame 2, a lower horizontal frame 3, a plurality of vertical frames 4, a plurality of outer boards 5, and slurry 6.

The upper horizontal frame 2 is a "ㄇ"-shaped slotted iron frame, fixed onto a

ceiling 71 by tap screws so that an upper portion thereof is flat.

The lower horizontal frame 3 is a "Π"-shaped slotted iron frame, fixed onto a floor 73 by tap screws so that the a lower portion thereof is flat.

The vertical frames 4 are arranged at an interval of about 45 cm and each frame is a "Π"-shape slotted iron frame. An upper end and a lower end of two side edges of the frame 4 are fixed to the upper and lower horizontal frames 2 and 3 by tap screws 77, respectively. Additionally, a hole 45 is provided at a suitable interval in an intermediate board of the frame 4.

The outer board 5 can be chosen from any one of the cement fiber board, the mineral fiber board and the like. The board in this embodiment is provided with several overflow holes thereon so as to produce the effect of mesh holes. Please refer to Figure 6. The overflow hole 51 has a stepped hole structure. The diameter of the inner hole 511 is about 1.5 cm, and that of the outer hole 512 is about 2.5 cm, so that a combination of such a structure and the slurry material produces a hooking effect. The board 5 is fixed to the two side edges 41 of each vertical frame 4 by tap screws 76 and thus forms with the frame an accommodating space 75 corresponding to a thickness of the wall being constructed. The tap screw 76 is sunk into the board and does not projected out of the board.

The slurry 6 fills the accommodating space 75 surrounded by the outer boards, and may be concrete or light weight cement.

In construction, the outer boards 5 are installed depending on the length and the height of the wall (there is a specification of 4 x 8 feet). The upper end of the whole board surface is provided with a filling hole 53 corresponding to the interval between the vertical frames 4. During construction, after pipe lines and electrical switches in the building are located in the accommodating space surrounded by the vertical frames 4, the slurry is filled through filling holes 53 to form the blocking wall.

With the structure described above, after the slurry is filled, an integral solid wall is formed. The outer surface of the wall is a cement fiber board or a mineral fiber board, and the surface is very smooth. The convenience achieved by this application when compared with prior art are as follows:

1. The outer board 5 is very smooth. After the slurry is filled, patching of the overflow holes 51, the slits and the screw holes can be directly carried out. The follow-up steps are very simple. As compared with the prior art, the structure of this application saves the time of patching and flattening upon filling the slurry as well as the time of powdering after filling the slurry. Hence, the constructing time is saved and the cost is reduced.
2. The outer board 5 provided with the overflow hole can achieve the mesh hole

effect, and the outer board is solid and not flexible. Therefore, in construction, the interval between two vertical frames 4 can be enlarged as compared with that of prior art so that the installation of the tap screws and the frames significantly reduces the labor cost.

3. The process of filling the slurry can be accomplished by filling the slurry in the upper portion of the filling hole 53 at one time. It is very fast and does not need to fill the slurry at several times.

The overflow hole 51 of this application not only provides the air-flowing function, but also serves as the hole for observing the inside situation of the slurry filling. The overflow hole 51 is of a stepped hole structure, and the outer holes 512 is larger than the inner hole 511 such that the hooking effect can be achieved after the slurry material is cured. So the combining effect can be further strengthened.

In view of the above, apparently, the construction of the blocking wall by filling slurry can be further improved. By the solidity and non-flexibility of the outer board and the mesh hole effect of the overflow hole provided thereon, the simplicity of the construction can be achieved. The application provides a simpler and faster technique for construction as compared with prior art in terms of installing the frames and boards, by saving the time of patching and flattening upon filling the slurry and the time of powdering after filling the slurry. Therefore, the cost of the construction as a whole can be saved about 20%, and thus the technique according to this invention can be regarded as an improved method for construction.

The constructing conditions are merely briefly described above. The structure of this application can be achieved by applying the current technique for combining constructing boards and the technique for filling the slurry. The difficulty, ill-combination, and generation of the bee nest in construction do not exist.

In summary, the detailed description of this application has been made above. This application can achieve the claimed effect and the goal by the modified structure disclosed therein. The content of this application has never been disclosed prior to the filing date, so this application has met the statutory requirements of the utility model patent, i.e. novelty and inventive step. Therefore, this application is filed according to the patent law.

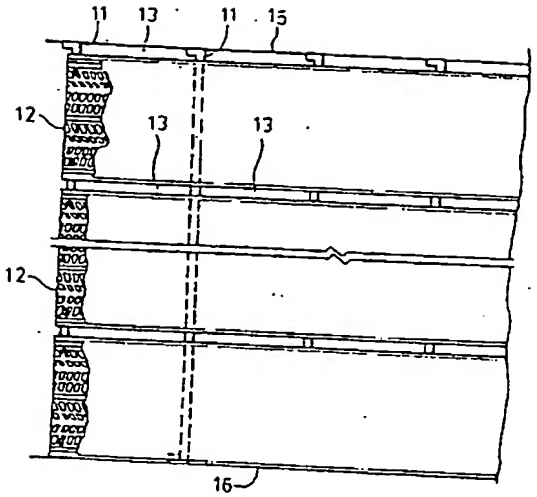
However, the above description is only directed to one of the preferred embodiments of this application. Various modifications made by people skilled in the field within the scope and the spirit of this application should be regarded in the scope of the following claims.

What is claimed is :

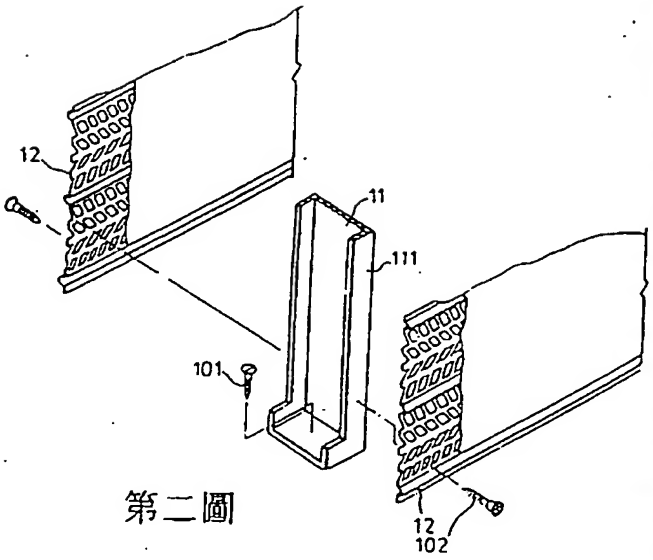
1. A structure of a blocking wall by filling slurry, comprising:
an upper horizontal frame fixed to a ceiling;
a lower horizontal frame fixed to a floor;
a plurality of vertical frames provided between the upper and lower horizontal frames at a predetermined interval, wherein each of the vertical frames has two side edges and is fixed to the upper and lower horizontal frames at top and bottom portions thereof, respectively;
a plurality of outer boards each having a plurality of overflow holes, wherein each of the outer boards is fixed to the two side edges of each vertical frame such that an accommodating space corresponding to a wall thickness is formed; and
slurry filled in the accommodating space surrounded by the outer boards.
2. A structure of a blocking wall by filling slurry as claimed in Claim 1, wherein said vertical frame is a slotted iron with a "ㄇ"-shaped cross section.
3. A structure of a blocking wall by filling slurry as claimed in Claim 1, wherein said overflow hole is of a stepped hole structure in which an outer hole portion is larger than an inner hole portion.
4. A structure of a blocking wall by filling slurry as claimed in Claim 1, wherein said outer board is a cement fiber board or a mineral fiber board.

Abstract

A structure of a blocking wall by filling slurry, comprising an upper horizontal frame fixed to a ceiling; a lower horizontal frame fixed to a floor; a plurality of vertical frames provided between the upper and lower horizontal frames at a predetermined interval, wherein each of the vertical frames has two side edges and is fixed to the upper and lower horizontal frames at top and bottom portions thereof, respectively; a plurality of outer boards each having a plurality of overflow holes, wherein each of the outer boards is fixed to the two side edges of each vertical frame such that an accommodating space corresponding to a wall thickness is formed; and slurry filled in the accommodating space surrounded by the outer boards. With the structure described above, a very solid wall can be constructed after the slurry is filled, wherein the outer board could be a concrete fiber board or a mineral fiber board which is flat enough so that it is only necessary to patch the overflow holes and the screwed holes directly. The follow-up steps are very simple, and the steps of constructing the frames and the outer boards are also simple.



第一圖



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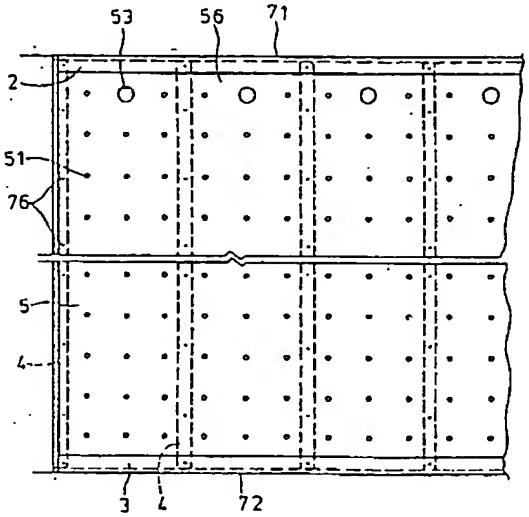

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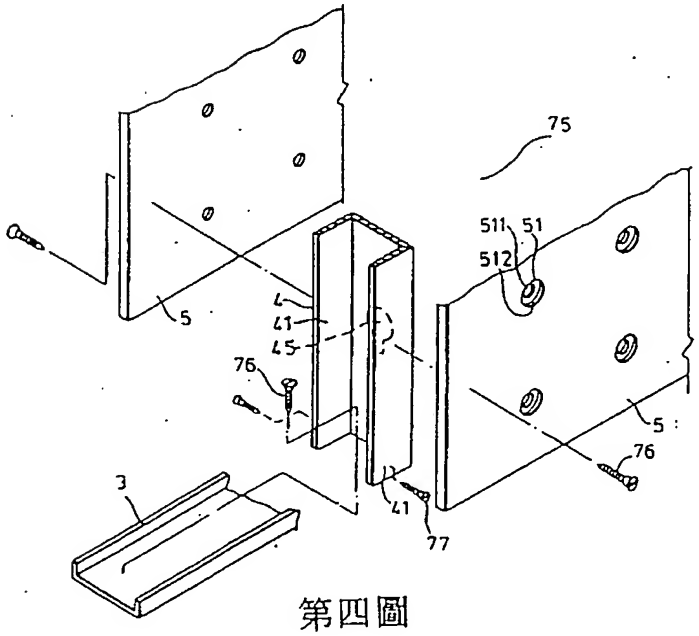

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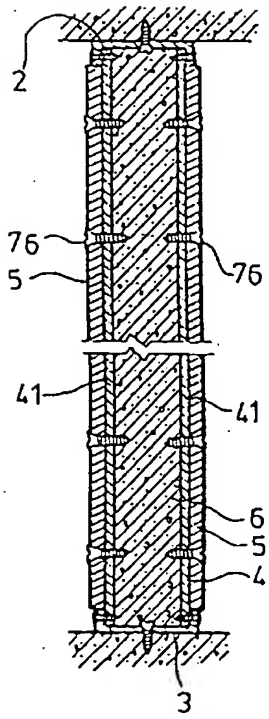

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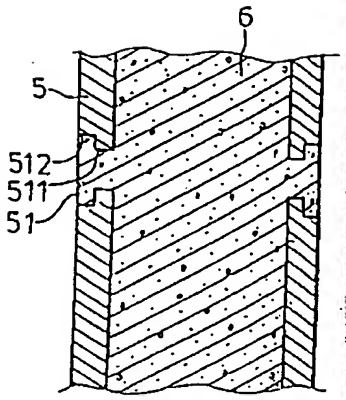

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